



Medical NBC Casualty and Resource Estimation Support Tool (NBC CREST)



***Training Course
Version 0.90***

***Center for Army Analysis
Fort Belvoir, Virginia
1-2 June 2000***





Medical NBC CREST Project Overview



- **Purpose**
 - Enable advanced planning for medical operations in an NBC environment
- **Objective**
 - Provide Medical Planners with a Tool Set to:
 - Estimate NBC casualties
 - Estimate medical requirements
 - Analyze alternate medical Courses of Action (COAs)
- **Government Participants**
 - OTSG, AMEDDC&S, MRMCM, CHPPM, FORSCOM, AFRRRI, CINCs, JCS, ASD-HA, JRCAB, U.S. Army Medical Elements...



NBC CREST v0.9 is Based on U.S. Army Medical Doctrine



- **Deliberate medical planning**
- **NBC only**
- **Focused on U.S. Army medical planning for a battlespace environment**
- **Multiple planning levels (Corps, Division, Brigade)**
- **Expect eventual extension to**
 - **Joint planning (coordination with MAT)**
 - **Civil Support**



NBC CREST Supports Specific Planning Needs at Each Level



- **Select pre-defined deployments or define tailored deployments.**
- **Select pre-defined attack scenarios or define new attacks**
- **Quickly estimate area logistical requirements with military and/or civilian population at risk**
- **Perform a detailed COA analysis based on deployed medical treatment facilities (MTFs)**



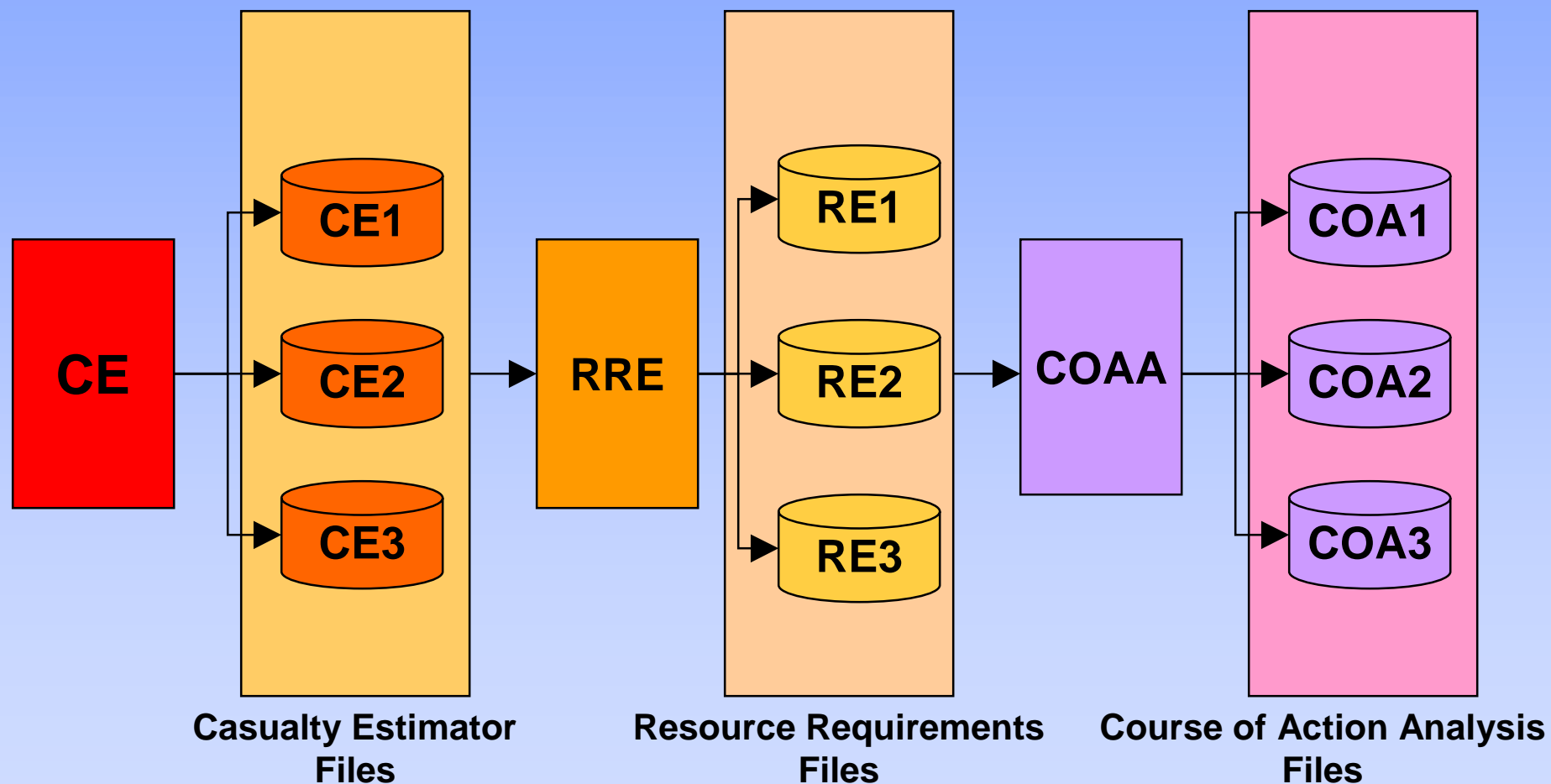
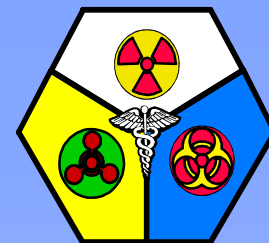
Estimation Process



- The CE utilizes military templates and civilian population groups
- RRE tabulates all required resources, available or not
- COAA uses specific allocations of resources to identify potential shortfalls
- Software supports a single user at a time
- Reports and files can be generated at each planning level
- Can generate multiple files from each module



Multiple Files can be produced by each Module Allowing Multiple Options to be Analyzed





CE Module Supports User-defined Scenarios



- Planner defines the NBC casualty/attack scenario in accordance with current threat assessment and operational requirements

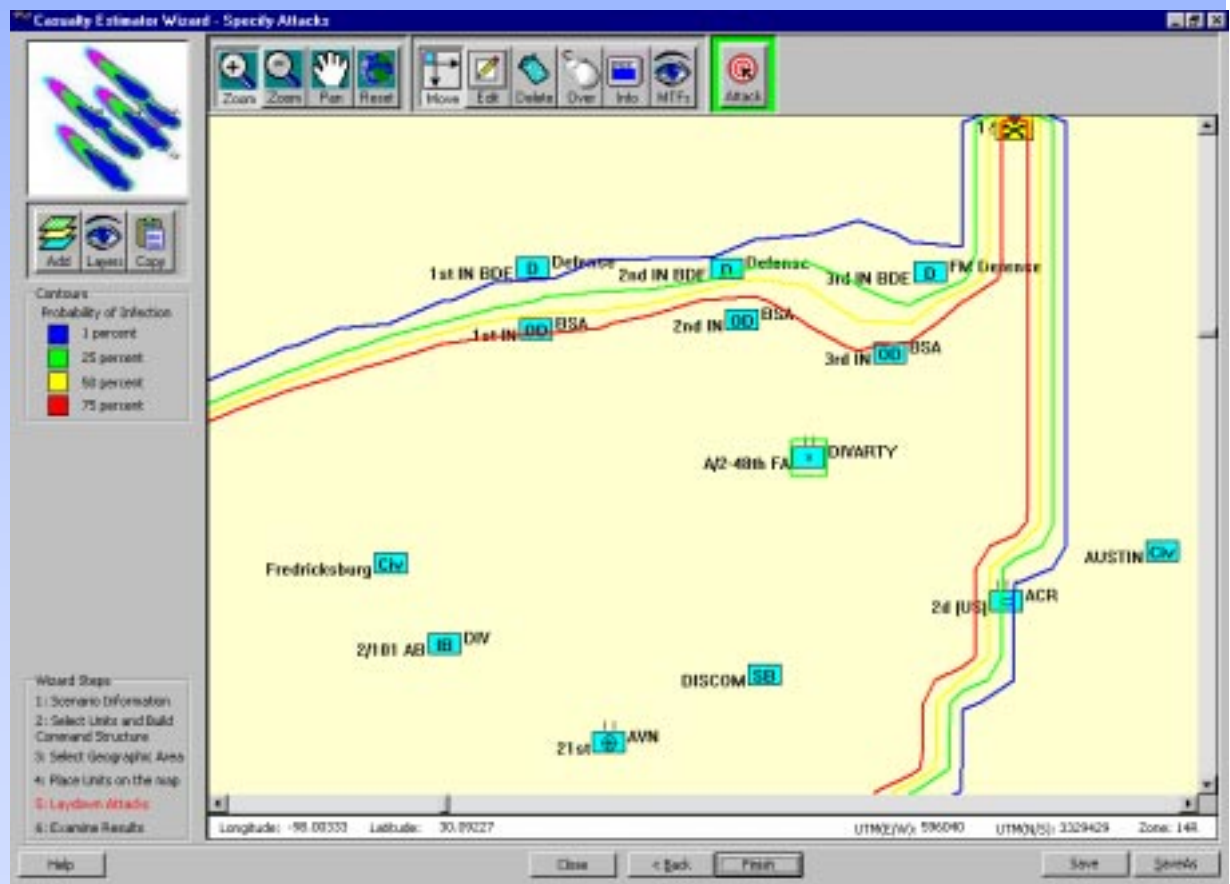
Positions units

Choose attack

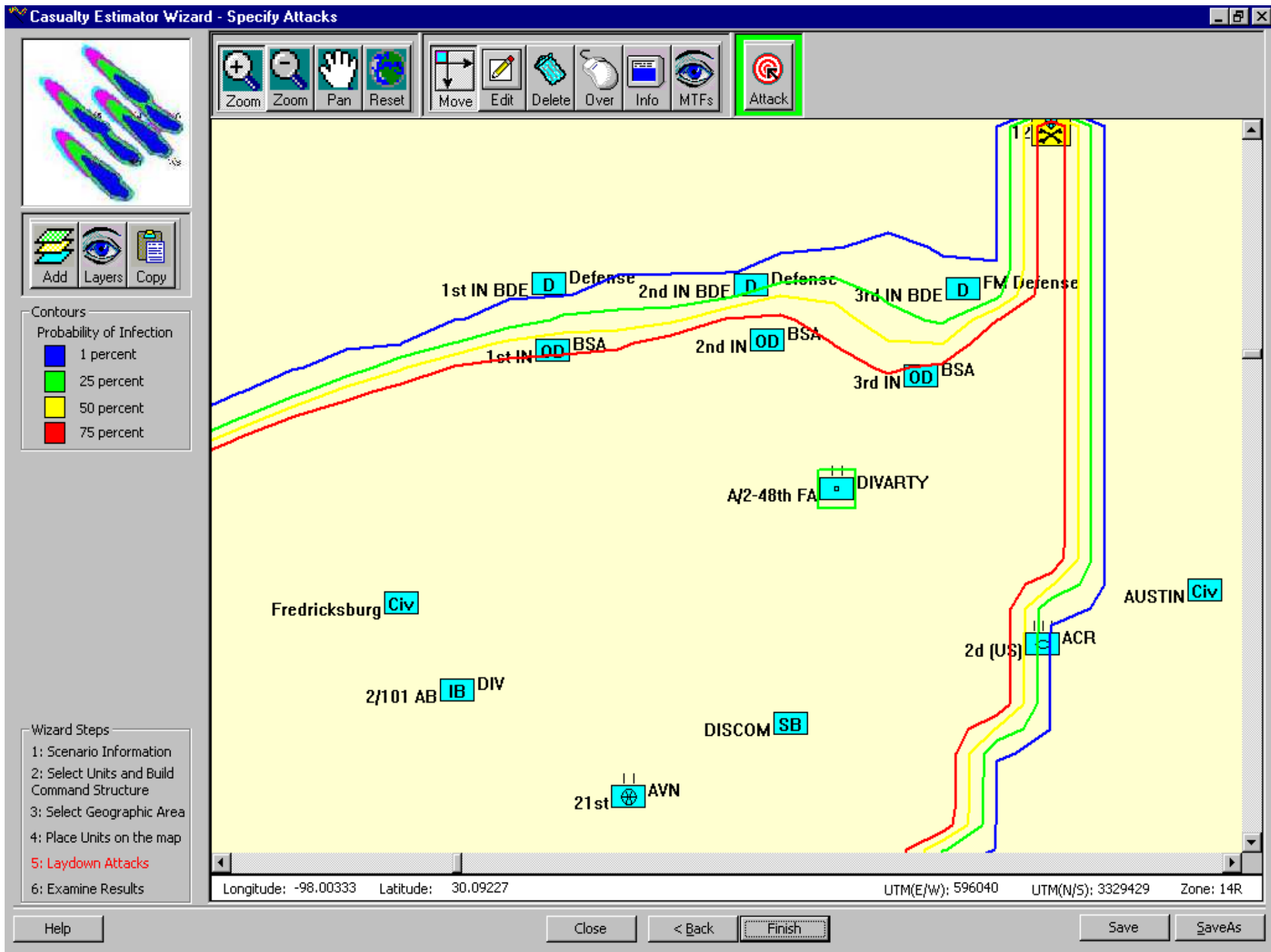
Specify vulnerable
units

Executes (finishes)
calculations

Save patient stream



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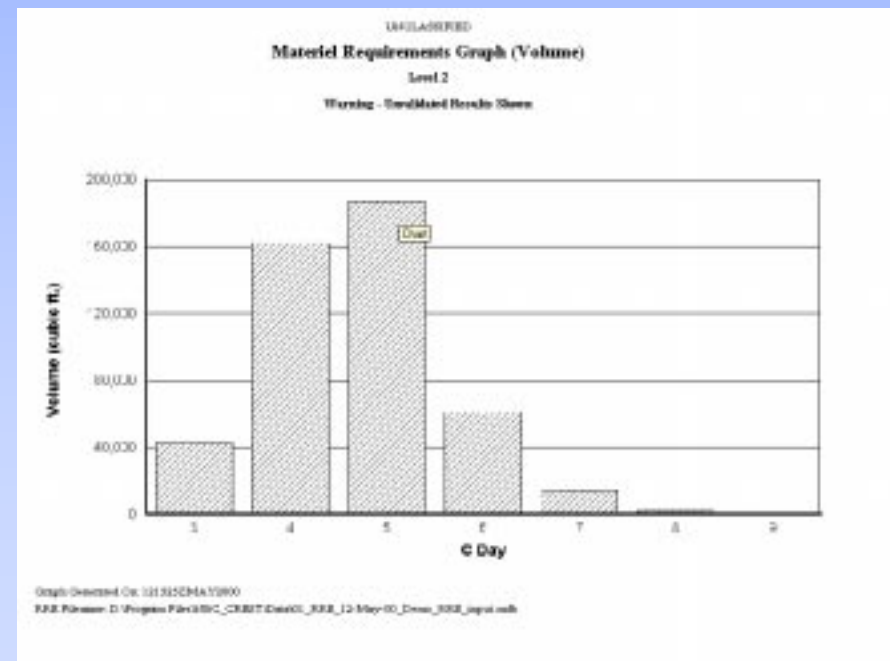




RRE Module Provides Quick Estimates of Logistical Requirements



- **Planner sets up RRE run by selecting**
 - Casualty stream
 - Military and/or Civilian casualties
- **Estimates medical requirements:**
 - Class VIII
 - Evacuation
 - Personnel
 - Beds





COAA Module Evaluates Possible Medical Courses of Action



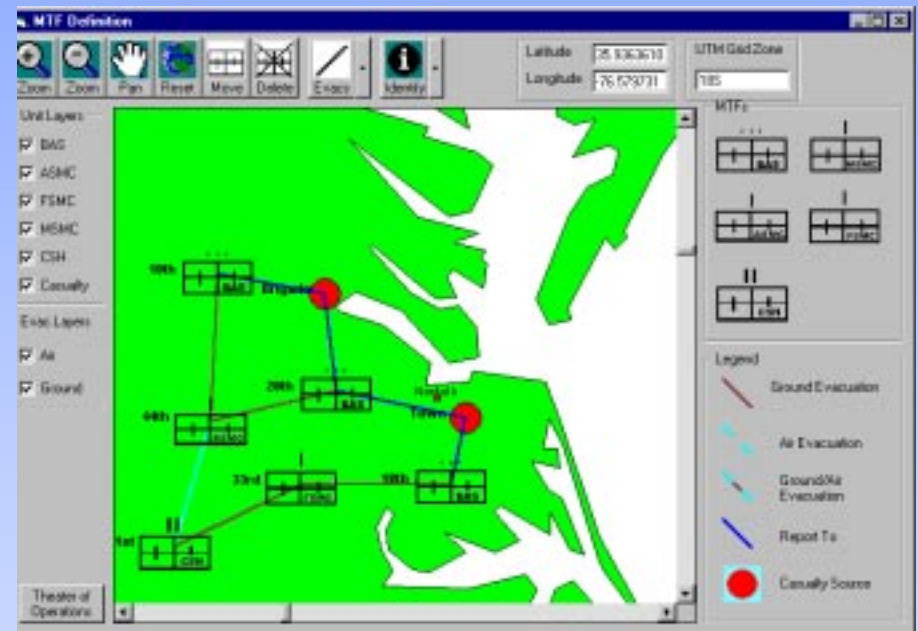
- **Planner sets up COAA run by selecting:**

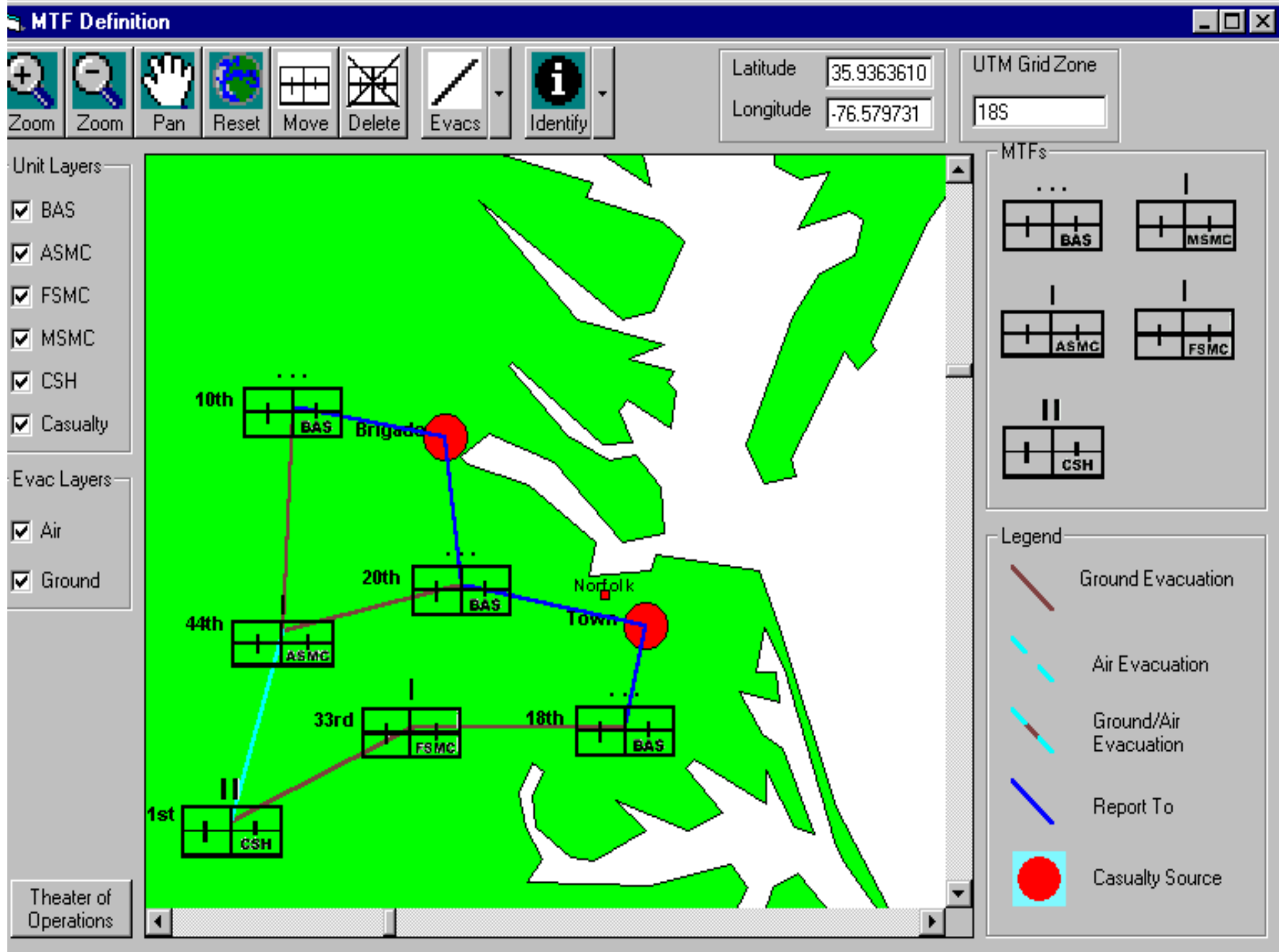
- Resource estimation file
- Military and/or civilian
- MTF network

- **Resource requirements compared to available resources**

- Shortfalls highlighted
- Results presented graphically

- **Iterate to mitigate shortfalls**







Medical NBC CREST Casualty Estimator (CE)



- **AMedP-8 Foundation**
 - Basic scenarios with pre-calculated NBC exposures
 - Troop deployments included as NBC CREST “templates”
- **User-Modifiable Deployments**
 - Hierarchical specification allows user to address desired level of detail
 - Map-based
- **Output**
 - Patient streams for Resource Requirements Estimation
 - Tables in AMedP-8 format as a reference



Key Design Assumptions and Constraints



- **Static Population (location and size)**
 - Medical Treatment Facility near insult point
- **Same models for both military and civilian**
 - Human Response
 - Treatment Patient Condition (PC) codes
- **MOPP Gear ...**
- **Multiple Insults**
 - Single insult per individual
- **Biological attacks**
 - PC Code generation assumes knowledge of agent involved



Planned Capabilities



- **Biological attacks**
 - Tularemia, Q fever, SEB
 - Anthrax, botulism, plague, VEE
 - ...
- **Chemical attacks**
 - Sarin (GB)
 - VX
 - Mustard (HD)
- **Nuclear attacks**
 - User-selected yield



Plans for Further Development



- **Refinements for Army Use**
 - Account for prophylaxis
 - Account for MTFs involved in attacks
 - Decontamination resources
 - Provide link to the Casualty Training System (CTS)
 - Improve plume import capability
 - Utilize TPFDD for force structure including medical component of MTOE (?)
 - Submit to Army VV&A
- **Move to Joint arena**
 - GCCS capability
 - MAT compatibility
 - Integration with MAT